

**To:** Mirror Lake Protective Association (MLPA)  
**From:** Kathleen Sciarappa MLPA Education Chair  
**Date:** 5/13/17  
**Re:** Wolfeboro Water Summit  
The Great Hall (Wolfeboro Town Hall)  
Sponsored by: Wentworth Watershed Association

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**Sponsors:** The Wolfeboro Fund, NHCharitable Foundation; Cate Memorial Fund Town; Edward Jones, Ken Lawlor, Financial Advisor

**Follow Up Event:** June 22 7:00pm-9:00pm

Lecture Series “Landscaping at the Water’s Edge” Dr. Catherine Neal  
NH Boat Museum,

### Welcome

Anne Blodget, Board President Wentworth Watershed Association

### Sam Evans Brown, Moderator

- Host of Outside/In on NHPR
- Water concerns are in the forefront
- Land trust alliances are thriving in the United States

### “Global Water Issues Manifested in NH”

**Speaker: Dr. Tom Ballesteros, UNH Hydrologist and Civil Engineer;  
Winner of The Water Resource Innovation Award**

- Climate change trends verified:
  - evidence temperatures are higher and rising is clear via multiple measures
  - snow cover is decreasing
  - precipitation is increasing (expecting 10-20% more with greater intensity) in significant portions of the world
    - causing 100 year floods with more coming
  - simultaneously, there are longer periods of dry days resulting in draught
  - run off is increasing 40%
  - impacts fire and winds (both increasing)

- The standard deviation on the data is that there are changing weather patterns since 1948 with increases towards 2006 and beyond data intensifies meaning:
  - floods will increase
  - planning is needed
  - Question: Is infrastructure obsolete?
  - Chicago, for example, is redesigning city infrastructure to accommodate more water
- Changes in New England are seen mostly since 1970
- Pattern of early thaws; more flows in streams and rivers earlier in the spring, progressively. Through August the flow at the base level is increasing. Consequently, overall it is “wetter.”
- 100 year flood and 500 year floods, especially comparing pre-1970 with post-1970; increase of flood probability 40%
  - has implications for the current infrastructure (insufficient)
  - increasingly, more land is in the flood plain area with insurance ramifications
- Summary:
  - Climate change has already happened.
  - Floods and draughts will be more prevalent and intense.
  - Precipitation run offs will increase in New England and dramatically reduce in the West.
  - Snow run off has been and will continue to be earlier.
  - Surface and groundwater quality is and will be impacted.
  - Species will be impacted in a chain of events as lower order species are decreasing in response to water changes thereby impacting the food chain.
  - Year 2040-2070: Precipitation will increase 10-20%; temperature increase 1-2 degrees.
  - Conclusion: Unsustainable future.
- Impact and how to adapt
  - raise bridges to meet clearance for ships (already being done in Oregon)
  - upgrade the engineering design standards
  - the water supply will be variable; although there will be periods of greater supply, there will be corresponding period of draught; extremes will intensify
  - the variability of run off is impacting streams
  - leaking pipes leading to sink holes all over the country
    - some pipes, in Manchester, NH for example, are 100 years old
    - Manchester has 500 miles of pipe with 17% over 100 years old

- Manchester has been replacing 2 miles per year which is vastly insufficient; costs millions as is with monumental increases expected
- impervious surfaces (paving) has been increasing and making significant contributions to the problem of run off
  - causes run off to reach streams much more quickly overwhelming them
  - even lawns have become impervious surfaces if mowed regularly
  - many storm water systems were built in the 1930s in NH
  - when water overwhelms the storm water system chaos ensues
    - in Manchester a young man walking at night was swept away and drowned in a storm drain
- most of the population lives in suburban and urban areas; urbanization causes higher peak flows (flooding) and lower base flows (drying up)
- up to 20% of impervious cover leads to loss of biodiversity; loss of water quality
- Is it reversible?
  - instead of “rain and drain” use filtering to improve the water and reduce the impact of the volume of water
    - green replacement is probably hysteretic (the lag of an effect behind its cause)
  - NH 303(d) list designates *storm water runoff* is the #1 pollution source
  - can retrofit impervious services (add green and filters)
    - Key: Green areas and filter systems must be maintained!
    - stream water restoration can be done
- impact on species
  - migratory patterns have been altered
  - certain species are disappearing
- waste disposal
  - historically, rivers seen as mechanisms for removing sewage /waste (until 950s)
  - until very recently, rivers were viewed as “infrastructure”

### **Don Kretchmer, DK Water Consulting Wolfeboro Wolfeboro Water Resources and Challenges**

- Upper Beech Pond: Wolfeboro water source (in Carroll County)
  - water is transferred and is municipally handled
  - individual wells are the other source
    - last year (2016) many wells went dry
  - close to running out of water several years; led to tightening up the system

- What if Upper Beech Pond is not longer available, or becomes contaminated?
  - use another lake in the watershed
    - must monitor and care for everything in the watershed for that particular lake; may not have control over the watershed
    - possible protective zones i.e. in a part of Lake Winnipesaukee
      - i.e. no swimming in the zone as in a portion of Lake Sunapee
      - i.e. Massabesic Lake, NH –no swimming; boat in half the lake (not the half with the intake for municipal water)
  - could drill a well
- DES Awarded Wolfeboro for their *treatment* of wastewater
  - store in pond and originally sprayed in the woods
  - switched to rapid infiltration systems
  - most other communities have a river to assimilate treated waste water
    - not available in Wolfeboro
- storms run off
  - contains nutrients, metals, bacteria, oil and grease, road salt, soil
  - phosphorus
    - numerous indicators that an abundance of phosphorus leads to overgrowth of algae, unwanted aquatic plants, and also lead to cyanobacteria blooms
    - fertilizer is a particular heavy source of phosphorus (if it contains phosphorus, which is clearly marked on the bags)
      - 8-12 times more phosphorus comes from lawns compared with phosphorus from woods
    - all local lakes have experienced increases in phosphorus content, with the exception of Rust Pond, which is decreasing in phosphorus content due to remediation measures taken
    - phosphorus comes from eroding roads and ditches
    - phosphorus comes from rain runoff, which may run unhampered into lakes
    - lack of shorefront vegetation makes phosphorus intake worse
- growth projections in Wolfeboro indicate rapidly increasing resident population plus increasing interest by vacationers
- Solutions
  - infiltrate; stop and slow water run off
  - establish rain gardens
  - increase understanding that water into public drains goes directly into the lake
  - use pervious pavement (so water can flow through the pavement)

- water quality monitoring (and watch the data-spread the word)
- stabilize ditches with rock or rip wrap
- control water fowl
  - less likely to walk on or through natural areas (they avoid predators)
  - lawns invite unhampered water fowl
  - establish natural barriers at the water's edge
- What if nothing is done?
  - lake water quality declines
  - lake clarity declines
  - solutions after the fact of problems developing are costly and not easy (and not always effective)
  - property value drops; tax base drops
  - tourists stop coming; local businesses suffer
- future options
  - stay small, or grow thoughtfully while preserving high water quality
  - think about what you put on your land, because it may end up in the water

### **Panel: Questions and Answers**

**Dan Coons:** Conservation Commission Chair

**Bob Cole:** Executive Director, Wentworth Watershed Association

**Matt Sullivan:** Director of Planning and Development, Town of Wolfeboro

**Pat Tarpey:** Executive Director, Lake Winnipesaukee Association

**Dave Ford:** Public Works Director, Town of Wolfeboro

#### **> Given what we all heard today, from your point of view, what are the solutions?**

- **Dan:** We look for land protection to influence water flows downstream.
- **Dave:** At Public Works we do quite a bit. Dirty water is treated and discharged properly; roads are handled appropriately. We have various projects for storm water treatment i.e. railroad station area we created a storm water treatment situation. Mast Landing boat ramp improvements have been instituted. Porous pavements, rain gardens etc. are part of that project and many others.
- **Pat:** Our focus is on management of watershed planning with local communities and municipalities. The watershed is large and is made up of many individual properties and we sometimes get push-back which is another aspect of our work.

- **Matt:** Our critical issue is communication with land owners and educating individuals regarding the shared values of all interested parties regarding water and the future.
- **Bob:** The Association has been very busy building partnerships to protect land and water. Example: protected 109 acres on the east end of Wentworth Lake. More than 200 donors allowed us to put land into a Conservation Land Trust. Also working on the execution of water management. We targeted 100 sites to effectively filter storm water run off. We are daily working to improve our relationships with all involved.

➤ **If you are a homeowner, what is the first step you should take? What are the current laws regarding fertilizer?**

- if you see any type of erosion or sediment leaving the property
  - trim edges
  - use native vegetation
  - create a buffer
  - address erosion
  - create rain gardens
  - educate homeowners
  - enforcement: goal is to get the homeowner to self monitor
  - *What's Your "P"* is a program on the website where a property owner can plug in their impervious sources then add rain barrels, rain gardens, etc and the site will calculate the environmental impact
- **June 22: Boat Museum program 7:00pm-9:00pm** will highlight landscaping suggestions for land owners

➤ **What can Wolfeboro do and what is beyond town control?**

- Before 1940's all the waste and raw sewage ran directly into the lake.
- Even when the law changed, it didn't include Smith River.
- We can do (and are doing) 1000 small projects in and around Wolfeboro.
- Should create a water resources department in Wolfeboro.
- Eight shorefront towns on Winnipesaukee and each needs to take responsibility for a plan and then advancing that plan (Paugus Bay receives everything in terms of waste from all the lake and all the towns.)
- More education needed to spread the message more thoroughly (maybe need to bring in tax ramifications.)

- There is an interconnection between land stewardship and water quality.  
People need a better understanding of this.

➤ **Describe the efforts to keep the Winnipesaukee watershed plan on track.**

- Going well until next year when we will experience EPA shortages of grants and support
  - although the towns are starting to step up, it's been small
  - the future is not looking good federally so local towns will need to take responsibility
- Many people in the room helped build the watershed plan. It's not having a watershed plan; it's the capacity to implement the plan. Implementation relies on yearly attention to finances and continuously moving the plan forward.

➤ **How do federal policies and cuts trickle down to local plans?**

- Plans themselves does not make actions happen.
- We need to be sure that Wolfeboro is identified as a place of need; we need votes from townsfolk to support any efforts. Support is likely to move from the federal level to the local level.

➤ **Are the monies for Land Conservation?**

- Federal level doesn't seem to have changes; locally, we've been supported by the town.
- Need to continue funding towards what we already have in place.

➤ **Update on cyanobacteria?**

- Lake Winnipesauke is on the New Hampshire 303(d) Impaired Waters list updated every two years. The listings include waters that are threatened by one or more pollutants

➤ **Sanding and salting: What is the impact and can it be stopped?**

- 2000 tons of sand and 1000 tons of salt used this year in Wolfeboro
- we have reduced use and cut back of sand on the paved roads and monitor what is going into ditches

- difficult when the public likes to see dry road
- balancing public safety with the environment
- southern part of NH has impaired their waters with chloride, but not here

➤ **Mast Landing: What are the improvements?**

- 9x9 blocks with stone and filtering system
- lead treatment system
- porous pavement for the parking
- rain gardens
- an infiltration trench with catch basins

➤ **Stay small was one solution suggested. Is that part of the conversation?**

- Our zoning and regulations indicate an interest in staying small in Wolfeboro.
- There is a Master Plan being developed which will address size and growth.
- Some towns along the lake wish to grow and others don't.
- There is a range of resources within towns, but all are urged to plan growth and address the issues we've discussed today as growth occurs; must weigh long run gains and losses.